



# Disparities in Wastewater Infrastructure

APPROACHING ADAPTATION THROUGH AN  
ENVIRONMENTAL JUSTICE LENS

# Overview

- ▶ Effectively treating our wastewater is essential to protecting Georgia's water and people
- ▶ Climate change will have negative impacts on our already aging wastewater infrastructure
- ▶ I study wastewater and climate change with Environmental Justice concerns in mind
- ▶ This means looking at the impacts of wastewater on the environment and public health, but also how those impacts are distributed based on race and income

# What is Environmental Justice?

- ▶ Environmental justice is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. This goal will be achieved when everyone enjoys:
  - ▶ The same degree of protection from environmental and health hazards, and
  - ▶ Equal access to the decision-making process to have a healthy environment in which to live, learn, and work.

(EPA, 2022)

# History of Environmental Justice



- ▶ Born out of citizen action beginning in the late 1960's and spearheaded by people of color
- ▶ Solid Waste Sites and the Houston Black Community (Robert Bullard, 1983)
  - ▶ **All garbage dumps, 80% of garbage incinerators, and 75% landfills were in black neighborhoods, even though the city was only 25% Black.**
- ▶ Siting of Hazardous Waste Landfills and Their Correlation with Racial and Economic Status of Surrounding Communities (US General Accounting Office, 1983)
  - ▶ Conducted in the Southeastern US
  - ▶ **3 out of 4 hazardous waste sites were in communities where African Americans made up at least 26% of the population, and whose incomes were below the poverty level**

# History of Environmental Justice

- ▶ Toxic Wastes and Race in the United States (The United Church of Christ Commission on Racial Justice, 1987)
  - ▶ First national level study
  - ▶ **Found that over 15 million African Americans, 8 million Hispanics, and half of all Asian/Pacific Islanders and Native Americans lived in communities with at least one abandoned or uncontrolled toxic waste site**
  - ▶ **Noted that although the socioeconomic status of residents appeared to play an important role in the location of hazardous waste sites, the residents' race was the most significant factor among the variables analyzed**
- ▶ Peer reviewed research continues to grow and evolve
  - ▶ UGA Library search of the last 10 years yields over 24K results

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NEAR PUMP TANK. FRENCH  
BACKGROUND.

9.17.02



DOSING TANK WAS FULL WHEN  
OPENED. PUMP APPEARS NOT TO BE  
WORKING.

9.17.02



Run off from Fre  
was installed app  
SIDE OF MOUND.

1:50 PM found  
Water meter read

## Why does this apply to wastewater?

- ▶ Untreated wastewater poses threats to both the environment and public health – it IS an environmental hazard!
  - ▶ Increased nutrients, low dissolved oxygen, algae blooms, fish kills
  - ▶ Increased risk of illness through exposure to well water, surface water, and contaminated shellfish
- ▶ Climate change will affect groundwater levels, precipitation, and flooding – impacting infrastructure and necessitating adaptation
- ▶ Using Environmental Justice framework allows us to ensure more equitable adaptation

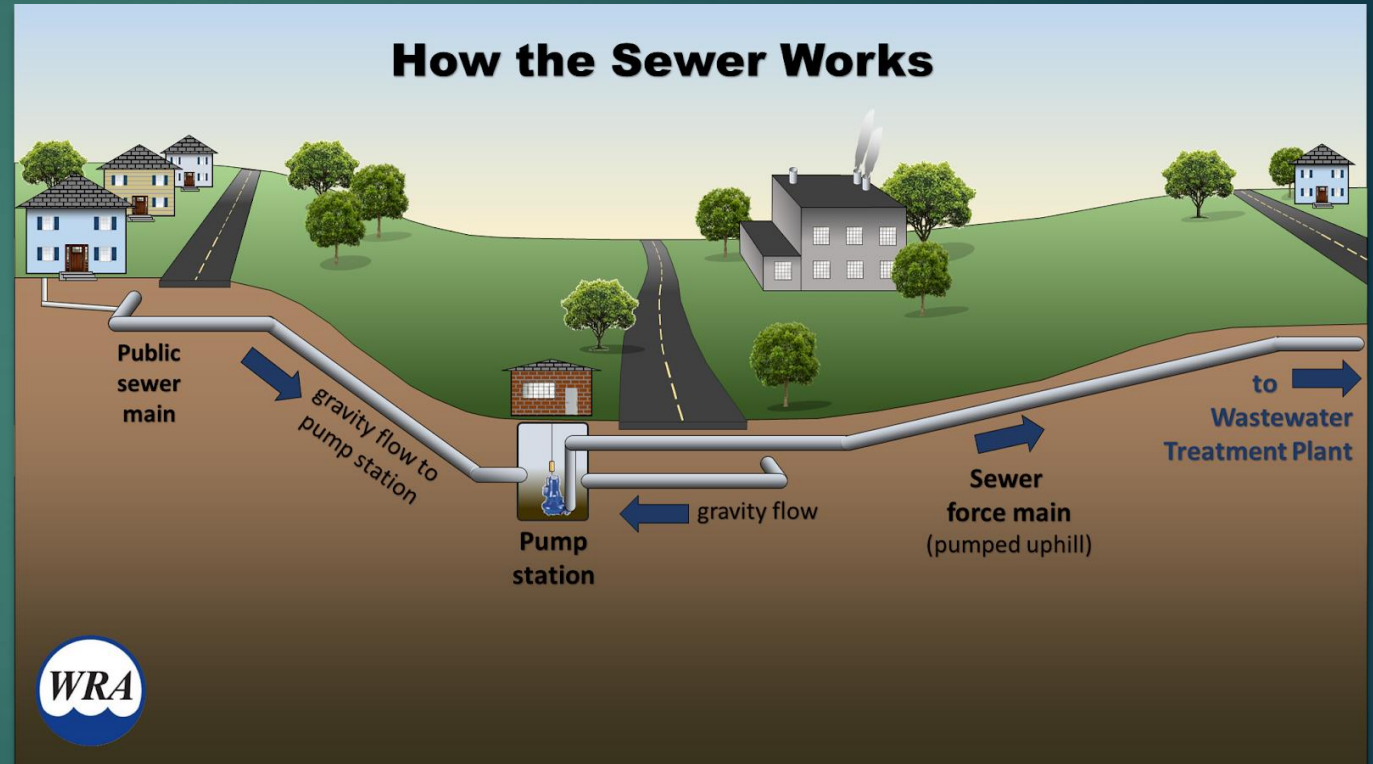
# Infrastructure: Septic Systems

- ▶ Waste is treated in the soil before it reaches groundwater (if functioning properly)
- ▶ Used by approximately 25% of US households and in 40% of new construction (mostly rural and suburban)
- ▶ Less expensive, no monthly bill, but costs and maintenance fall entirely on homeowner



# Infrastructure: Sewer Systems

- ▶ Waste is piped to a treatment plant, then discharged into surface water
- ▶ Generally used in urban areas, much better for high density development
- ▶ Installation cost is high, comes with monthly bill, BUT city is responsible for most maintenance



# Coastal Wastewater Challenges

- ▶ Rising seas, rising groundwater
- ▶ Heavier precipitation events
- ▶ Tidal flooding
- ▶ Hurricanes
- ▶ Increased development and density
- ▶ Financial constraints
- ▶ Aging infrastructure

**What are the pros and cons of each treatment system in these scenarios?**



# So, what do we do?

- ▶ How we approach the decision-making process is just as important as the solutions themselves
- ▶ What questions should we be asking?
  - ▶ **WHO gets a say in decision making, and why?**
  - ▶ **How have decisions been made in the past, and have they been equitable?**
  - ▶ Can residents or local budgets afford it?
  - ▶ How long will it last under climate change projections?
  - ▶ How big are the risks if it fails?
  - ▶ How will it be maintained? Privately or publicly?

# Current Efforts

- ▶ **Septic mapping**
  - ▶ Where are the tanks and how old are they?
  - ▶ How densely are they being used?
- ▶ **Groundwater testing around septic systems**
  - ▶ How well are the systems functioning now?
  - ▶ How much has the ground water risen?
- ▶ **Writing grants to pump out and replace septic tanks**
  - ▶ EPA 319 funds
  - ▶ Provides both short- and longer-term solutions
- ▶ **Historical sewer mapping**
  - ▶ How has sewer expanded over the years?
  - ▶ Have specific communities been left out?
- ▶ **Partnering with the Glynn Environmental Justice Advisory Board and local citizen groups**
  - ▶ Ensuring that current research and decision making is guided by the local community

# Research Goals

- ▶ Improve water quality/  
lower exposure to  
pathogens
- ▶ Engage environmental  
justice strategies to ensure  
a more equitable process
- ▶ Provide data to support  
infrastructure renewal  
efforts
- ▶ Ensure community  
engagement in decision  
making processes



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# Thank you!